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ABSTRACT

The terms "institutes and centers" or organized research units are used to refer to the broad range of "non-departmental structural alternatives" often called "laboratories," "bureaus" or "clinics" at the host institutions. Current status, growth trends, and crganizational sponsorships of these institutes and centers are reviewed in this report. The growth rate has slowed, but these nondepartmental alternatives continue to proliferate. Those disciplines or programs with direct linkages to public policy questions such as social sciences, regional studies, and education display greater volatility and are more likely to have shorter tenure as institutes and centers. Phaseout decisions are based on many issues, including financial exigency and director terminations. Appended is tabular data on organized research units by division at 51 land-grant institutions. (Author/LBH)

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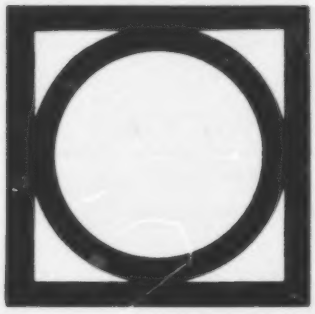
The Continuing Saga of Institutes and Centers

Renee C. Friedman



Center for the Study of Higher Education
Report No. 28

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I

INTRODUCTION

Background Information

Among the first orders of business for the newly established Center for the Study of Higher Education at The Pennsylvania State University in 1969 was an examination of the growth, development, and accommodation of institutes and centers within the organizational framework of American Colleges and universities.[1] The land-grant institutions were accorded special emphasis.[2] By the late sixties these recent additions to the academic scene not only came to parallel, but also, in some instances, to rival the conventional departmental structure. Frequently, particularly on the more prestigious,research-oriented campuses, the number of organized research units exceeded the number of disciplinary departments. The primary reference source for the project, the third edition of the *Research Center Directory*, published in 1968, contained over 4,000 listings. Considering that the first version did not appear until 1960, the proliferation of institutes and centers was all the more remarkable.

The results of earlier research have been described in two Center reports, several journal articles, a government report, and a commercially published book (Ikenberry, 1970; Norman, 1971; Ikenberry and Friedman, 1972; Anderson et al. 1973). As an aid to the reader in understanding the current data and discussion, the major findings of the previous investigations are summarized:

1) Contrary to the ivory tower notion, the world of academe is neither oblivious to nor isolated from the changing economic, social and technological needs of society. Over the past three centuries American higher education has expanded its mission from teaching to creating and delivering knowledge. Nowhere is this more apparent than at the land-grant colleges and universities. The research function for this group, albeit a limited one, began with the passage of the Hatch Act in 1887 which established the Agricultural Experiment Stations, the first embodiment of the research center concept. This initial federal support coupled with subsequent national legislation helped create the science of agriculture. Between that historic date, 1887, and the onset of World War II, the research and service activities of the university, apart from agriculture, which was conducted outside the departmental structure, grew at a modest rate. World War II, later reinforced by the launching of Sputnik, generated the kind of financial support that accelerated the growth of institutes and centers, particularly in science and engineering.

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[1]For convenience, the terms "institutes and centers" or "organized research units" are used to refer to the broad range of "non-departmental structural alternatives" often called "laboratories," "bureaus" or "clinics" at the host institutions. Applying the label "organized research unit" universally may be more charitable than is warranted sometimes but the distinctions among the group are not always obvious when collecting information from secondary sources.

[2]See section on ORUs in Land-Grant Colleges and Universities.

2) The impetus for centers and institutes derives from many sources: sponsors, faculty, and university administrators. The leading outside contractor for university-based services is the national government. Given the enormity of demands encumbered by a technologically oriented society committed to democratic values, the federal bureaucracy cannot attract, retain, and support on a continuing basis the manpower, equipment and physical plant needed to cope with rapidly changing needs and requirements. The institute model seems ideally suited for task fulfillment of limited duration. Further, as Rossi (1964) observed, one of the major reasons why government agencies come to the university rather than to the commercial firms is that the academic community is more concerned with technical purity than the latter (p. 1158). Faculty members like the perquisites – travel monies, secretarial support, twelve month contracts – that center membership can provide. Administrators make use of centers and institutes to recruit and retain prominent faculty, increase institutional prestige, and, on occasion, resolve interpersonal conflict.

3) Many functions are carried out by institutes and the nature and combination of these functions differ drastically although the range tends to be circumscribed. In theory, institutes and centers engage in scholarly activities that could be conducted within the departmental structure; however, the disciplinary framework is not geared to the division of labor and type of coordination frequently needed for such tasks. Furthermore, two rationales advanced for the institute format are its need for cross-disciplinary collaboration and its task orientation. Institutes and centers that conduct research do tend to focus on projects of an applied nature as opposed to theory-building or basic research which is viewed as the domain of departments. It is the claims of cross-disciplinarity that have been greatly exaggerated by the proponents of the institute format.

4) Disciplinary labels are definable across all university boundaries; institutes and center titles are not. Some organized research units are complete bureaucracies with stable budgets, permanent buildings, and continuing staff; others operate on a shoestring, move frequently, and have no or limited personnel support. There are even some, with printed stationery and detailed descriptions in the *Research Centers Directory*, that exist primarily in the minds of their would-be directors. Hanging up a shingle is easy; there are no accreditation standards. Many institutes and centers stretch across the campus, literally and figuratively, incorporating a multiplicity of disciplines and specialties; others are basically extensions of a single disciplinary department. The distinction between the two types does not always lie in size and budget.

5) Institutes and centers may be, but are not necessarily, formal organizations with a research orientation. Having "roots" probably makes for more contented university living, but ad hoc or shadow institutes can serve a useful institutional purpose. Their lack of permanence in funding, housing, and personnel make them easier to assemble and dismantle when needed for short-term problem-solving. In addition to the performance of research, a variety of options is open to institutes and centers as facilitators or administrators of research, education, or public service.

6) Some institutes and centers are *at* rather than *of* the university. Faculty members and administrators frequently dismiss the research outputs of such organizations as pedestrian and inconsequential and tend to view the professional staffs as, at best, modestly competent. Kruytbosch and Messinger (1968) have discussed the problem of unequal peership as it related to full-time researchers at the University of California (Berkeley). Certainly the question of second-class citizenship, denial of tenure eligibility or membership in faculty decision making, is a real one. The resolution of these problems as well as the expectations of the participants, however, depends on the governance structure of the university, the relationship between the center director and the contributing departments, the enabling procedure for the creation of the institute or center, the goals and aspirations of the university and the director for his organization, and a host of other professional and environmental factors. In 1969, when the land-grant institutions were first surveyed, guidelines for the creation, continuation and review of institutes and centers had not been established at most of these colleges and universities, at least not in written form.

7) Some conflict between centers and institutes and departments is inevitable. Power in the university, at least from the perspective of a center director, lies in the disciplinary departments by virtue of their control over professorial appointments and access to tenure. In general, the more prestigious the university the more tightly the reins of power are held by the disciplinary departments and the more complex the enabling procedure becomes for the establishment of a center or institute. The tension is, of course, exacerbated by confusion within the academic community itself about goals and priorities.

Current Considerations

What is the current status of institutes and centers? The last seven years have not been opulent ones for the academic establishment. The same governmental agencies that had in the previous two decades so generously funded a variety of projects on a short- and long-term basis began to provide less, in real dollars, for more costly research expenditures. Graduate programs, enhanced by the availability of external monies, produced more students than were required by a declining birth rate and contracting skilled labor market. Double-digit inflation compounded the existing problems. How have centers and institutes fared under the circumstances?

Growth Trends

The spectacular growth of institutes and centers is affirmed by the number of entries, over 5,000, that appeared in the 1975 edition of the *Research Centers Directory*, the fifth such edition. One added feature of the earliest volume was the inclusion of the membership list of the National Council of University Research Administrators, a group formed that year (1960) at the University of Chicago. Gifts or grants offices may be regarded as long-time standard operations, and indeed some have lengthy histories; nonetheless, the establishment of this professional association, which occurred less than two decades ago, heralded the "coming of age" of research at the university and the "big business" nature of contract research.

Originally titled the *Directory of University Bureaus and Institutes*, the change with the second and subsequent editions to *Research Centers Directory* was more than cosmetic. In addition to restructuring the classification system, all research organizations in Canada and the United States which meet the *Directory's* criteria for inclusion are listed.[3] Foundation and other privately sponsored research organizations are included; however, most institutes and centers are allied with American colleges and universities.

Table I is a graphic representation of the rise and fall of operating or contemplated institutes and centers by year and division and without regard to university or private sponsorship. (The seventeen sectional headings are abbreviated in the tables Appendix A contains the full listings in the *Directorys'* Tables of Contents.) Because inactive and disbanded organized research units have been deleted from the count, these figures do not necessarily conform to the totals recorded for every section in each edition of the *Directory*.

For informational purposes the 1960 data are presented although they are somewhat misleading. For example, the quantum leap in the agricultural division between 1960 and 1965 is partially artificial; branches of the Agricultural Experiment Stations did not have separate listings in the first edition Similarly, what subsequently became Sections 15 and 16 were merged into one category in the initial volume.

Even though the peak period for individual groups is almost evenly divided between 1972 and 1975, all but two areas of concentration, business and labor, experienced exponential growth in the fifteen year interval from the initial publication of the *Directory* to the issuance of the fifth edition in 1975. The mathematics division registered the most dramatic expansion of all the groups, increasing almost ten-fold in less than two decades. The majority of the mathematical listings, however, denote computation centers that are normally facilitators rather than performers of research. As a matter of national policy following the Soviet "first" in space exploration, tremendous financial resources were committed to programs that would assure the nation of scientific parity with or superiority over the USSR. Mathematics, in its pure and applied forms, was a beneficiary. In addition, any institution that could do so, felt the need to establish its own computer facility.

Other areas, too, shared the "good fortunes" of the times. The social sciences and education tended to approximate the percentage growth achieved by the life and physical sciences as well as engineering.

The "golden age" for institutes and centers, as reported in the various editions of the *Directory*, extended from 1960 to 1968, although the growth cycle slackened appreciably between 1965-1968. Not until the 1972 edition did

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[3]For inclusion the institute or center must be formally identified by a specific or distinctive name or title and established on a permanent basis as a separate entity for carrying on a continuing research program. Research is interpreted broadly to include fundamental, applied, and developmental studies, data gathering, analysis and synthesis, and supporting service units such as computation centers, statistical laboratories, etc.

TABLE I

GROWTH AND DECLINE OF INSTITUTES AND CENTERS BY DIVISION[a] AND YEAR

DIVISION	1960 N	1965 N	1965 % INCREASE (1960)	1968 N	1968 % INCREASE (1965)	1972 N	1972 % INCREASE (1968)	1975 N	1975 % INCREASE (1972)	NET % INCREASE 1960-1975
Agriculture	68	405	496%	501	24%	517	3%	542	5%	697%
Astronomy	26	62	138	74	19	78	5	69	-12	165
Business	106	145	37	200	38	218	9	168	-23	58
Conservation	40	169	323	253	50	301	19	274	-9	585
Education	80	170	113	290	71	366	26	356	-3	345
Engineering	62	125	102	266	113	306	15	272	-11	339
Government	104	117	13	188	61	244	30	236	-3	127
Labor	33	36	9	43	19	40	-7.0	40	0	21
Law	23	31	35	38	23	45	18	56	24	143
Life Sciences	226	573	154	750	31	936	25	887	-5	292
Mathematics	31	222	616	322	45	320	-1.0	328	3	958
Physical Sciences	122	355	191	510	44	578	13	569	-2	366
Regional Studies	49	137	180	138	1	171	24	174	2	255
Social Sciences	125	299	139	490	64	575	17	602	5	382
Multidisciplinary Programs	61	78	28	81	4	122	51	157	27	157
Research Offices		165		212	28	205	-3.0	204	< 1	24
Addendum	74	99		23				124		68
TOTAL	1230	3188		4379		5022		5058		311%
% INCREASE		159%		37%		15%		1%		

[a]The 1960 edition was titled *Directory of University Research Bureaus and Institutes* and the scholarly areas were classified in a slightly different fashion. The early data have been adjusted to conform to the presently used divisions.

minor net losses occur within certain areas of concentration. As government and private funding declined, supporting institutions were forced to take a hard-nosed look at the administrative costs of research conducted outside the departmental structure as well as at the quality and quantity of the research output produced by such organizations. (The who, when, and why forms the plot for Part 2 of this report.)

By 1975 more than half of the divisions registered a decline in ranks ranging from a negligible reduction (less than one percent) for the research coordination branch to a sizeable loss (23 percent) among the business, economics, and transportation sectors. Nonetheless, while institutes and centers had ceased to grow at the hectic pace of the previous decade, this alternative to the traditional departmental structure had managed to maintain itself and thrive during an extended period of academic retrenchment. In fact, the increase is greater than is apparent in the tables since the figures given are corrected for those organized research units that no longer exist.

Table 2 contains the same data presented in a different manner. In this instance, the number of operating centers and institutes within each of the seventeen sectors has been converted into percentage figures that reflect the total amount of coverage expended on that particular research activity in the second edition and each subsequent edition of the *Directory*. First edition data have been eliminated from this table because the format and classification scheme were substantially different.

Institutes and centers in the Life Sciences division hold a commanding lead over all other groups, totaling almost one-fifth of the listings in each edition of the *Directory*. At a distance but clustered together are the following categories: Physical Sciences, Social Sciences and Humanities, and Agriculture. The "Big Four," regardless of *Directory* edition, account for more than 50 percent of all reported organized research units, at least in numbers if not necessarily in research support dollars. Althougn the percentage contributions to the total are small and might go unnoticed, Astronomy has fallen on hard times and Multidisciplinary Programs seem to be on the upswing.

ORUs in Land-Grant Colleges and Universities

Previous PSU-CSHE studies conducted by the Center for the Study of Higher Education at The Pennsylvania State University concentrated on the land-grant universities for a variety of reasons. As a set, land-grant universities constituted a definable class of institutions, with certain traditions of applied research and public service. Geographically, they spanned the nation; academically, they ranged from the eminent to relatively obscure. In addition, the land-grant institutions, with two exceptions, hosted the water resources research units in their respective states (Ikenberry and Friedman, 1972). The national network of water centers, generated by federal legislation, provided the researchers with a recent example of a single institute common to a distinctive type of academic setting.

In the interest of continuity and comparability, data relative to the institutional deviants that housed the water centers, Georgia Institute of

TABLE 2

PERCENTAGE OF OPERATING CENTER ACTIVITY BY DIVISION AND YEAR

DIVISION	1965 N	1968 % TOTAL	N	1972 % TOTAL	N	1975 % TOTAL	N	% TOTAL
Agriculture	405	13%	501	11%	517	10%	542	11%
Astronomy	62	2	74	2	78	2	69	1
Business	145	5	200	5	218	4	168	3
Conservation	169	5	253	6	301	6	274	5
Education	170	5	290	7	366	7	356	7
Engineering	125	4	266	6	306	6	272	5
Government	117	4	188	4	244	5	236	5
Labor	36	1	43	1	40	1	40	1
Law	31	1	38	1	45	1	56	1
Life Sciences	573	18	750	17	936	19	887	18
Mathematics	222	7	322	7	320	6	328	6
Physical Sciences	355	11	510	12	578	12	569	11
Regional Studies	137	4	138	3	171	3	174	3
Social Sciences	299	9	490	11	575	11	602	12
Multidisciplinary Programs	78	2	81	2	127	2	157	3
Research Offices	165	5	212	5	205	4	204	4
Addendum	99	3	23	1			124	2
TOTAL	3188	99%	4379	101%	5022	99%	5058	98%

SOURCE: *Research Centers Directory*, A. Palmer (Ed.), Detroit, Michigan: Gale Research, 1965, 1968, 1972, 1975.

Technology, which is public, and Cornell University, which is private but operates the Agricultural Experiment Station under contract with the state of New York, are grouped with the land-grants. Since the third edition of the *Directory* (1968) served as the backdrop, that particular year is the base upon which the subsequent institute and center development as shown in Tables 3 and 4 is assessed.

As illustrated in Table 3, regardless of *Directory* edition, land-grant universities account for at least one-third of all institutes and centers. Although the distribution formula varies by field and year, one research activity is almost the exclusive province of the group – agriculture. In 1968, 85 percent of all functioning agriculture-based organized research units were located in such settings, and, in fact, the land-grant institutions have increased their dominant position in the field during the ensuing seven years. By 1975 more than half of all reported institutes and centers in the Conservation division (51 percent) were under land-grant sponsorship. Three additional areas – engineering (45 percent), labor and industrial relations (43 percent) and the physical sciences (38 percent) – are well represented.

Some organized research units are luxuries that few universities can support. Observatories (Astronomy) are a case in point. In contrast to humanities or social science centers that can be assembled easily and cheaply, the cost of creating and maintaining an observatory is, unfortunately, astronomical. Accordingly, the number of astronomy-based operations declined in 1975 (minus 12 percent) except among the land-grant group (plus ten percent) which reversed the trend. (See Tables 1 and 6.) The more affluent land-grant members, particularly those in the sunbelt region, capitalized on their naturel surroundings and were able to use such facilities to tempt prominent astrophysicists and meterologists to their faculties. (Note the Astronomy Division in Appendix B - Table 9.)

Less than half of the land-grant universities operate accreditated law schools (25) or medical schools (24). Consequently, they have been less affected by cutbacks in medical research funds. Indeed, in 1975, the group recorded a modest increase in the number of units engaged in life sciences research (plus 2 percent) as opposed to a minus pool (minus 5 percent) for all institutions. (See Table 1.) Renewed interest in the law, fueled by concern with civil rights and civil disobedience, consumer protection, environmental pollution, and the Watergate scandal, sparked the growth of legal and social science policy centers.

Table 4 traces the development of institutes and centers on an institutional basis. Only the totals, adjusted for the listings in the Addendum in the 1968 and 1975 *Directories*, appear. Appendix B contains the data from which these summary figures derive. While the percentage gains for the land-grant colleges and universities, as a whole, did not quite match the 1972 record for all sectors, 13 percent, the land-grant models fared considerably better in the last three years, experiencing a 5 percent increase as opposed to an overall 1 percent rise (Table 1).

Inconsistencies in reporting the appearance or disappearance of research centers and institutes do not invalidate the value of the *Research Centers Directory*

TABLE 3

PERCENTAGE OF RESEARCH CENTERS LOCATED
IN 51 LAND-GRANT UNIVERSITIES[a] BY DIVISION AND YEAR

DIVISION	1968			1972			1975		
	TOTAL	LAND-GRANT N	LAND-GRANT %	TOTAL	LAND-GRANT N	LAND-GRANT %	TOTAL	LAND-GRANT N	LAND-GRANT %
Agriculture	501	426	85%	517	450	87%	542	472	87%
Astronomy	74	15	20	78	18	23	69	20	29
Business	200	53	27	218	62	28	168	52	31
Conservation	253	119	47	301	142	47	274	140	51
Education	290	62	21	366	81	22	356	77	22
Engineering	266	117	44	306	133	43	272	122	45
Government	188	42	22	244	50	20	236	51	22
Labor	43	17	40	40	19	48	40	17	43
Law	38	7	18	45	10	22	56	13	23
Life Sciences	750	189	25	936	219	23	887	224	25
Mathematics	322	70	22	320	76	24	328	78	24
Physical Sciences	510	179	35	578	215	35	569	217	38
Regional Studies	138	30	22	171	31	18	174	33	19
Social Sciences	490	97	20	575	112	19	602	143	24
Multidisciplinary Programs	81	22	27	122	24	20	157	34	22
Research Offices	212	51	24	205	47	23	204	50	25
Addendum	23	4	17				124	22	18
TOTAL	4379	1500		5022	1689		5058	1765	
% LAND-GRANT			34%			34%			35%

[a]Georgia Institute of Technology and Cornell University are included in the land-grants in conformity with previous data reporting.

TABLE 4

CHANGE IN REPORTED NUMBER OF RESEARCH CENTERS IN 51 LAND-GRANT UNIVERSITIES

INSTITUTION	1968 BASE NUMBER	1972 N	1972 % CHANGE	1975 N	1975 % CHANGE	% CHANGE 1968-1975
Alabama-Auburn	21	24	14%	24	0%	14%
Alaska-Univ. of	20	20	0	25	25	25
Arizona-Univ of	46	70	52	61[a]	-13	33
Arkansas-Univ. of	24[a]	27	22	26	-7	13
California-Berkeley	81	81	0	72	-11	-11
Colorado-Colo. State	29	28	-3	29[a]	4	0
Connecticut-Univ. of	20	23	15	20	-13	0
Delaware-Univ. of	9	11	22	15[a]	36	67
Florida-Univ. of	42	46	10	50	9	19
Georgia-Georgia Tech.	6	8	33	8	0	33
Hawaii-Univ. of	32[a]	34	13	34	-3	10
Idaho-Univ. of	18	19	6	23	21	28
Illinois-Univ. of	73	82	12	76[a]	-7	4
Indiana-Purdue	28	34	21	32[a]	-6	14
Iowa-Iowa State	24	26	8	26	0	8
Kansas-Kansas State	35	35	0	36	3	3
Kentucky-Univ. of	16	19	19	21	11	31
Louisiana-La. State	41	44	7	41	-7	0
Maine-Univ. of	16	15	-6	21	40	31
Maryland-Univ. of	28	26	-7	32[a]	23	14
Massachusetts-Univ. of	12	13	8	23	77	92
Michigan-Mich. State	39	50	28	46[a]	-8	18
Minnesota-Univ. of	56	61	9	82	34	46
Mississippi-Miss. State	22	25	14	20	-20	-9

[a]Corrected to reflect the centers listed for those institutions in the ADDENDUM.

TABLE 4 (Cont'd)

CHANGE IN REPORTED NUMBER OF RESEARCH CENTERS IN 51 LAND-GRANT UNIVERSITIES

INSTITUTION	1968 BASE NUMBER	1972 N	1972 % CHANGE	1975 N	1975 % CHANGE	% CHANGE 1968-1975
Missouri-Univ. of	32	37	16	35	-5	9
Montana-Montana State	20	20	0	19	-5	-5
Nebraska-Univ. of	16	17	6	28	65	75
Nevada-Univ. of	29	32	10	30	-6	3
New Hampshire-Univ. of	9	7	-22	9	29	0
New Jersey-Rutgers	24	28	17	36	29	50
New Mexico - N.W.S.	14	16	14	16[a]	0	14
New York-Cornell	44[a]	50	19	54[a]	6	26
North Carolina-N.C.S.	34[a]	36	12	35[a]	-5	6
North Dakota - N.D.S.	16	16	0	17	6	6
Ohio - Ohio State	36	48	33	74	54	106
Oklahoma - O.S.U.	33	31	-6	32[a]	0	-3
Oregon - Oregon State	34	36	6	33	-8	-3
Pennsylvania - Penn State	43	51	19	92[a]	80	114
Puerto Rico-Univ. of	31	37	19	33	-11	6
Rhode Island - Univ. of	6	9	50	8	-11	33
South Carolina-Clemson	16	14	-13	14	0	-12
South Dakota - S.D.S.	16	19	19	14	-26	-12
Tennessee Univ. of	28	39	39	47[a]	21	68
Texas - Texas A & M	59	59	0	68[a]	15	15
Utah - Utah State	31	42	35	45[a]	7	45
Vermont - Univ. of	7	6	14	6	0	-14
Virginia - V.P.I.	21	23	10	18	-22	-14

[a]Corrected to reflect the centers listed for those institutions in the ADDENDUM.

TABLE 4 (Cont'd)

CHANGE IN REPORTED NUMBER OF RESEARCH CENTERS IN 51 LAND-GRANT UNIVERSITIES

INSTITUTION	1968 BASE NUMBER	1972 N	1972 % CHANGE	1975 N	1975 % CHANGE	% CHANGE 1968-1975
Washington-Wash. State	22	26	18	22	-15	0
West Virginia - W.V.U.	22	20	-9	18	-10	-14
Wisconsin-Univ. of	98	120	22	92[a]	-23	-6
Wyoming	21	29	38	27	-7	29
TOTAL	1500	1689		1765		
PERCENTAGE CHANGE		13%		5%		

[a]Corrected to reflect the centers listed for those institutions in the ADDENDUM.

as a research aid, but must be borne in mind when assessing the data. For example, while institutes and centers did indeed prosper at the two universities reporting the greatest increases over the past seven year period, Penn State (114 percent) and Ohio State (106 percent), part of the phenomenal growth was due to the listing of the branch substations of the Agricultural Experiment Stations at these institutions for the first time in the 1975 edition of the Directory.[4]

Numbers provide an input into the evaluation process but reveal little about the organizational health of the institutes and centers which they represent. The chemistry of creation, adaptation, and survival, complex for living organisms, is no less so for institutions. The notion of institutes and centers is alive and well as evidenced by the continuing establishment of new units. Given the shifting of research priorities, the land-grant universities, as a whole, seem to have managed to amend and replace those organized research units that were no longer *au courant*. In absolute numbers, the land-grant group sponsored more institutes and centers than ever before. Just how well these non-departmental alternatives thrived in the land-grant setting can be partially deduced from the autopsies performed on the casualty lists in the next section of the report.

[4]Reporting center and institute activities at the participating colleges and universities may be a function of the administrative structures governing these organized research units. Despite its role in monitoring such organizations, the Center for the Study of Higher Education of the Pennsylvania State University, under the aegis of the provost rather than the director of intercollege programs, is not listed in any edition of the *Directory*.

II

THE LOST COLONIES

Institute Typology

Based on the Becker and Gordon taxonomy (1966), a classification scheme was developed by Ikenberry and Friedman (1972) identifying three organizational models for institutes and centers – standard, adaptive, and shadow. Standard institutes had sufficient stability in goals and resources to develop full managerial hierarchies and permanent professional staffs. Adaptive types were continually redefining their goals, initiating and terminating projects, securing and releasing personnel. Shadow (paper) institutes employed no staff, were alloted no permanent space or budget, and functioned on an ad hoc basis. The obvious advantage of adaptive and shadow institutes was their flexibility and receptivity to changing demands and, correspondingly, their easy dissolution after task accomplishment.

Such is not necessarily the case. The desire for survival runs strong in most organizations, and institutes and centers are no exception. Center prerequisites such as secretarial assistance, travel monies for conferences, and twelve month contracts are difficult for faculty to relinquish. Nonetheless, financial emergencies and other forms of pressure do result in the termination of institutes and centers.

Table 5 depicts the number of phase-outs within each sector as reported in three editions of the *Directory* (1968, 1972, 1975). In addition, the raw numbers have been converted into percentage figures that reflect the declines in relation to the total number of active or contemplated units.

In 1968, on the average, only 3 percent of all centers and institutes were dissolved, although two research areas, social sciences/humanities and law, were more seriously affected than the others in this time frame.

Four years later, the decrease approached 10 percent, more than a three-fold jump in the "mortality" rate. Four divisions were considerably above the mean; education (17 percent) social sciences/humanities (15 percent), astronomy (14 percent), and government (12 percent). Three categories, multidisciplinary programs (3 percent), agriculture and conservation (5 percent) were significantly below the mean.

By 1975, when the fifth edition of the *Directory* was published, the dissolution rate had slackened slightly to 9 percent. With the exception of astronomy, three of the four sectors described above, education (17 percent), government (13 percent), and social sciences/humanities (12 percent) again showed phase-out rates appreciably above the average. Labor (13 percent) also fits into this category. Mathematics and astronomy institutes and centers, cut back earlier, were minimally affected (3 percent). In two consecutive editions, 1972 and 1975, agriculture and multidisciplinary programs fared well in comparison with other research areas.

TABLE 5

NUMBER AND PERCENTAGE OF PHASE-OUTS BY DIVISION AND YEAR

DIVISION	1968			1972			1975		
	TOTAL	N	%	TOTAL	N	%	TOTAL	N	%
Agriculture	501	11	2%	517	26	5%	542	35	6%
Astronomy	74	1	1	78	11	14	69	2	3
Business	200	5	3	218	24	11	168	15	9
Conservation	253	4	2	301	16	5	274	20	7
Education	290	9	3	366	61	17	356	60	17
Engineering	266	6	2	306	27	9	272	23	8
Government	188	7	4	244	29	12	236	30	13
Labor	43	1	2	40	3	8	40	5	13
Law	38	4	11	45	3	7	56	5	9
Life Sciences	750	18	2	936	63	7	887	63	7
Mathematics	322	1	1	320	28	9	328	9	3
Physical Sciences	510	9	2	578	56	10	569	43	8
Regional Studies	138	3	2	171	14	8	174	16	9
Social Sciences	490	35	7	575	86	15	602	74	12
Multidisciplinary Programs	81	3	4	122	4	3	157	10	6
Research Offices	212	9	4	205	28	14	204	15	7
Addendum	23	2	9				124	9	7
TOTAL/PERCENTAGE	4379	128	3%	5022	479	10%	5058	434	9%

Organizational Sponsorship

Using secondary sources limits the pool of reliable data. Based on past experience, budgetary information, personnel counts, and stated positions within the organizational framework that appear in the *Directory* about centers and institutes are frequently inaccurate, outmoded, or oversimplified. For these reasons, only three variables have been chosen as aids in understanding continuity or termination for the institute mode. Even these three variables – sponsorship, longevity, and terminal explanations – provide flavoring rather than definitive answers.

The *Directory* reports on institutes and centers at American and Canadian colleges and universities as well as those sponsored by professional associations and foundations. These Directories' board groupings have been subdivided into ten categories in Table 6. Phase-outs that are described in the 1968 edition have not been dissected since they are numerically inconsequential and historically obsolete. Data derived from two editions, 1972, and 1975, have been combined in Tables 6, 7, and 8.

American colleges and universities are categorized in Table 6 as private, public or religious meaning that the sponsoring church sect could exert considerable policy influence in curriculum, student and faculty selection. Land-grant institutions are listed separately from other publicly supported institutions because of their unique characteristics. Foundation is a generic term for all organizations external to colleges and universities and without regard to affiliation or tax status. Public or private is the only distinguishing element for Canadian collegial institutions.

Not surprisingly, the bulk of academic research activities, of which centers and institutes are an outgrowth, are concentrated in the American university sector. The biggest losers, from an institute perspective, were the public universities; over 51 percent of all phase-outs occurred in the land-grant and other state or locally supported institutions. When the percentage total for universities under religious auspices is combined with that for that private sector, the decline approximates 32 percent. Less than 9 percent of institutional cut-backs occurred at the college level (private, public, and religious) in the United States. Although the foundations terminated comprised less than 8 percent of the total, this group may, in fact, have suffered the greatest losses.

Scanning Table 6 yields useful data related to the life cycles within divisions of institutes and centers located in land-grant institutions. This set experienced 25 percent of the phase-outs according to the combined 1972-1975 information bank. Nonetheless, in the same time period, land-grant universities continued to represent 34 percent of all organized research units (Table 3). Three areas – law (zero percent), government (3 percent), and astronomy (8 percent) were relatively "untouched." In fact, of the 13 astronomy units dissolved, the private sector colleges (2) and universities (8) accounted for 77 percent. As expected, the greatest number of cut-backs in the agriculture sector (75 percent) did take place in the land-grant group. Yet, they still supported 87 percent of all such activity in the two reporting years (Table 3). Labor institutes (50 percent)

TABLE 6

NUMBER OF DIVISIONAL PHASE-OUTS BY ORGANIZATIONAL SPONSORSHIP 1972/1975

DIVISION	SPONSORSHIP										TOTALS/DIVISION PERCENTAGE	
	PRIV. COLL.	PUB. COLL.	REL. COLL.	PRIV. UNIV.	PUB. UNIV.	REL. UNIV.	LAND-GRANT	FOUND.	CAN. PUB.	CAN. PRIV.		
Agriculture	0	0	0	1	8	0	46	5	0	1	61	6.7%
Astronomy	2	0	0	7	0	1	1	2	0	0	13	1.4
Business	3	0	0	8	13	3	10	1	0	1	39	4.3
Conservation	1	1	0	5	6	0	10	6	4	3	36	3.9
Education	6	8	2	19	45	9	22	10	0	0	121	13.3
Engineering	0	1	0	17	12	0	15	5	0	0	50	5.5
Government	7	4	0	17	22	2	2	3	1	1	59	6.5
Labor	0	1	0	1	1	0	4	0	1	0	8	.9
Law	0	0	0	4	2	1	0	0	0	1	8	.9
Life Sciences	3	5	1	26	31	5	33	13	1	8	126	13.8
Mathematics	1	2	0	8	12	1	9	1	2	1	37	4.1
Physical Sciences	4	4	0	26	23	2	21	8	1	10	99	10.8
Regional Studies	0	4	3	5	7	5	5	1	0	0	30	3.3
Social Sciences	4	2	4	44	48	14	29	12	2	1	160	17.5
Multidisciplinary Programs	1	1	0	4	1	0	4	3	0	0	14	1.5
Research Offices	3	0	1	10	9	5	13	0	0	2	43	4.7
Addendum	0	1	0	2	2	1	3	0	0	0	9	1.0
TOTALS/COLLEGES	35	34	11	204	242	49	227	70	12	29	913	
PERCENTAGES	3.8%	3.7	1.2	22.3	26.5	5.4	24.9	7.7	1.3	3.2		100.0%

were notable casualties followed by engineering (30 percent) multidisciplinary programs (29 percent), and conservation (28 percent).

Last In, First Out?

Following current inventory accounting practices, are institutes and centers with the least seniority first to be terminated? Data furnished by directors about dates or origin for their respective centers were collapsed into nine time sequences. The results are reported in Table 7.

According to Table 7, the answer is yes and no. A little over 9 percent of the phase-out notices contained no founding information. Because of the time lag in reporting birth announcements and obituaries, for organized research units, the post 1970 era has limited relevance, although one law center "self-destructed" in record time.

If the Unknown category is deleted, and the eight time frames shown in Table 7 are divided, the "newer" institutes, those created between 1956-1970, did experience the greatest decline in ranks (over 60 percent). In comparison to the "older" centers, the survival rate was two to one in favor of the "veterans."

Two observations obfuscate the issues and temper a positive response to the question raised at the beginning of this section. When the first half of the time sequel is considered separately, the greatest number of phase-outs (11.5 percent) befell the "senior citizens" of the group, those created prior to 1940. When the second half of the time sequel is considered separately, the distribution curve does not rise but rather crests in the center, the 1961-1965 period.

A horizontal reading to Table 7 provides some clues. Approximately 23 percent of all cut-backs among centers of pre-1940 vintage occurred in the agricultural division. Subsequent phase-outs among the agricultural group were modest by comparison. Sizeable losses in numbers or percentage terms, during the same time period, were also incurred by the astronomy, life sciences and social sciences sectors.

Four divisions accounted for 66 percent of the depletions during the 1966-1965 span: education, life sciences, physical sciences, and social sciences/humanities. In all four groupings, the number of cut-backs for centers and institutes established from 1961-1965 represented at least one-third of their total decline in the more than thirty year interval covered in Table 7. These areas are particularly vulnerable because of their numbers. However, education was the sector most adversely effected, 41 percent of all education centers founded between 1961-1965 "expired."

Why Us?

What reasons were offered in the obituary notices for the demise of such centers and institutes? Most statements were cryptic and provided few details Despite the brevity, however, the information volunteered offered some clues in understanding the internal workings of organized research units, survivors as well as victims.

TABLE 7

NUMBER OF PHASE-OUTS BY DIVISION AND DATE OF ORIGIN
AS REPORTED IN 1972/1975 *DIRECTORIES*

DIVISION	UNK.	PRE 40	40-45	46-50	51-55	56-60	61-65	66-70	POST 70	TOTALS/DIVISION	PERCENTAGES
Agriculture	13	24	2	9	3	4	5	1	0	61	6.7%
Astronomy	2	9	0	0	0	1	0	1	0	13	1.4
Business	2	6	0	3	5	3	14	6	0	39	4.3
Conservation	1	6	1	4	4	6	8	6	0	36	3.9
Education	7	5	3	7	9	14	50	26	0	121	13.3
Engineering	6	7	1	5	6	8	12	5	0	50	5.5
Government	3	5	2	3	3	13	15	15	0	59	6.5
Labor	0	1	0	1	0	4	1	1	0	8	.9
Law	1	0	0	2	1	1	2	0	1	8	.9
Life Sciences	10	16	3	7	12	25	42	11	0	126	13.8
Mathematics	1	1	0	2	3	14	11	5	0	37	4.1
Physical Sciences	12	8	5	10	8	16	33	7	0	99	10.8
Regional Studies	0	1	1	4	2	7	8	7	0	30	3.3
Social Sciences	15	12	4	11	15	25	56	22	0	160	17.5
Multidisciplinary Programs	1	0	0	1	3	2	1	6	0	14	1.5
Research Offices	10	3	2	3	0	7	12	6	0	43	4.7
Addendum	1	1	0	1	0	1	5	0	0	9	1.0
TOTALS/DATE OF ORIGIN	85	105	24	73	74	151	275	125	1	913	
PERCENTAGES	9.3%	11.5	2.6	8.0	8.1	16.5	30.1	13.7	0.1		100.0%

Table 8 is based on the responses. Sixty-five percent simply noted that the center had been closed, discontinued, or disbanded. An additional 14 percent indicated that the center had been merged or absorbed into a department or another existing or newly created university organization. Foundations (category 4) suffered the same fate. Although lack of funds may have been a decisive force in determining the outcome, less than 3 percent listed finances as the cause of the denouement.

Four percent acknowledged that the death, retirement, or transfer of the director to another position caused the center closing. (The reader may recall the earlier discussion related to the use of center directorships as a technique for attracting prominent faculty.) In fact, this is probably a very low estimate of the number of centers and institutes that are personalized operations without established lines of succession that cannot maintain themselves once the guiding spirit departs.

The ninth category was reserved for explanations that did not fit anywhere else. The two centers in this group were phased out because the research personnel were needed for teaching purposes.

"Where Have All The Flowers Gone?"

Many pre-1940 vintage agriculture centers subsequently closed were branch sub-stations or extensions of the Agriculture Experiment Stations usually housed at the main campuses of the land-grant institutions. Generally located in remote areas of the state and devoted to crop, livestock, or pesticide research no longer of paramount importance to the local or state economy, these outposts and demonstration farms were managed by one or two professionals. In times of retrenchment, continuation of such minimal operations probably could not be justified.

A similar fate befell the "old guard" centers sponsored by the private sector. Maintenance of astronomical observatories, herbariums, and other museums required financial and professional resources to which hard-pressed private colleges and universities could not commit themselves indefinitely. Frequently, the discontinued centers were teaching aids or facilitators of research rather than direct performers of research.

In some instances, the cuts were more drastic in scope. For example, Georgetown University not only closed its observatory but terminated the department of astronomy as well. Other universities followed suit by phasing out programs and departments.

Centers and institutes are frequently promoted on the basis of their task orientation and easy dismantling once the task has been accomplished. Only eleven of the 913 phase-out centers surveyed indicated that project completion or termination was responsible for the institute closings. One of the eleven had a fifty year tenure to "do its thing."

TABLE 8

REASONS GIVEN FOR PHASE-OUTS BY DIVISION 1972-1975

DIVISION	PHASE-OUT CATEGORY 0	1	2	3	4	5	6	7	8	9	TOTALS/DIVISION PERCENTAGES	
Agriculture	0	44	9	2	2	0	2	1	1	0	61	6.7%
Astronomy	0	7	2	0	2	1	1	0	0	0	13	1.4
Business	0	28	6	2	1	0	0	0	1	1	39	4.3
Conservation	0	18	10	1	2	2	2	1	0	0	36	3.9
Education	0	95	9	3	1	1	5	3	4	0	121	13.3
Engineering	0	35	7	3	3	0	2	0	0	0	50	5.5
Government	0	44	9	2	0	0	2	0	2	0	59	6.5
Labor	0	5	2	0	0	0	0	1	0	0	8	.9
Law	0	7	0	1	0	0	0	0	0	0	8	.9
Life Sciences	0	75	14	10	3	3	11	0	9	1	126	13.8
Mathematics	2	16	10	0	0	1	7	0	1	0	37	4.1
Physical Sciences	1	54	10	15	2	3	8	1	5	0	99	10.8
Regional Studies	0	25	2	2	0	0	0	0	1	0	30	3.3
Social Sciences	0	100	18	7	3	12	8	3	9	0	160	17.5
Multidisciplinary Programs	0	8	1	1	0	0	0	2	2	0	14	1.5
Research Offices	0	25	17	0	0	0	0	0	1	0	43	4.7
Addendum	0	7	0	1	0	0	0	0	1	0	9	1.0
TOTALS/REASONS	3	593	126	50	19	23	48	12	37	2	913	
PERCENTAGES	.3%	65.3	13.8	5.5	2.1	2.5	5.3	1.3	4.1	.2		100%

LEGEND:

0 = Unknown
1 = Discontinued
2 = University Merger
3 = Transferred
4 = Foundation Merger
5 = No Funds
6 = No Longer a Research Unit
7 = Process of Reorganization
8 = Director Related
9 = Idiocyncratic

Governments gave and took away. Some projects begun by centers and institutes were later absorbed by state and federal agencies. Others, once state or federally funded, terminated along with the money.

The range of possibilities became unlimited. Foundations moved to universities. Non-profit organizations were converted into profit making ones and vice versa. Corporations purchased university-based units en masse. A few reverse splits occurred; one institute became two. University consortia dissolved; total responsibility was transferred to one institution. And perhaps the best of all worlds – one center became a department.

What happened to the people? Only three institute notices indicated that the personnel had been absorbed into other departments or centers at the university.

III

SUMMARY

Centers and institutes are alive and well and living in American colleges and universities. While the exponential growth rate that characterized the decade between 1955 and 1965 has slowed, these nondepartmental alternatives still continue to proliferate, but just how much may not be immediately apparent from scanning the tables since all tabular material has been adjusted to reflect only active or contemplated units. According to Table 1, centers and institutes increased 15 percent between the publication of the third and fourth editions of the *Directory*, 1968 and 1972 respectively, and an additional 1 percent in the three year time span prior to the appearance of the fifth edition in 1975. The actual expansion was significantly greater; discontinued operations were replaced and new ones created. Twenty-five percent in 1972 and 10 percent in 1975, computed by adding the phase-out rates for these respective periods, are more accurate reflections of the state of the art.

Comparative statistics related to this phenomenon have not been systematically collected for all academic sectors. Therefore, it is difficult to assess the current status of centers and institutes at private or public colleges and universities other than those at land-grant institutions. The latter seems to offer a hospitable climate. One possible explanation for the "success" of the institute and center model at these institutions lies in the nature of the land-grant universities considered as a whole.

Those disciplines or programs with direct linkages to public policy questions such as social sciences, regional studies, and education display greater volatility and are more likely to have shorter tenure as institutes and centers. Because many of the land-grant colleges and universities emphasize professional training in engineering, agriculture, and life and physical science related subjects, they are frequently less susceptible to the national policy upheavals that can accompany political change. There is, of course, turnover in the science related areas also, but it is not as swift or easy since these centers tend to be standard institutes (complete bureaucracies), occupying considerable space and controlling sizable budgets.

Aggregate data mask the intense struggle for survival that permeates every scholarly area. Departments, major building blocks in the university structure, die slowly, if at all. Not so for institutes and centers who have no assurance of a lasting life. They are, in large measure, creations of a demanding society, and consequently, subject to the whims of a vacillating public which is not always sure about its needs and priorities. President Carter's recent energy plan emphasized solar energy as one means of achieving national energy self-sufficiency. Yet, one of the centers phased out in 1972 was a Solar Energy Laboratory. When John Kennedy was president, mental retardation commanded national attention. The research focuses of many education and life science center"casualties" discussed in this report were the physical, educational, social and psychological problems of exceptional children and adults.

The fact that institutes and centers are not accorded permanent tenure should not be misconstrued as an unhealthy sign for the sponsoring institutes. Neither does it negate the value of nondepartmental alternatives. Centers and institutes can perform valuable services for society and the academic establishment which is an integral part of that society. If frequent policy shifts ultimately result in a better quality of life for all people, then the maintenance of a parallel organization within a university framework that focuses on societal problems and that can be assembled or disassembled with a minimum of stress is a major societal contribution. The "rub" is the will to survive on the part of organizations that have outlived their usefulness.

Hard questions must be asked by faculty and administrators before a center or institute is approved. It is far easier to deny a permit than it is to demolish a finished building. Nothing is free. Claims of financial solvency should be only one input into the decision process, for no contract funds are guaranteed in perpetuity, and if the money stops, what price will the university pay?

Centers and institutes do serve useful societal and institutional purposes, but they can also cause goal displacement and confusion. Offering directorships as inducements to attract and retain prominent faculty can prove to be a serious mistake unless the particular unit in question has institutional legitimacy. Academic retrenchment has limited their options, but the entrepreneurial professors who make such demands often tend to move on, leaving the organization without an heir apparent and with a professional staff that the university under other circumstances may not have chosen to hire. Directorship vacancies, whatever the reasons, are opportune times for natural selection principles to work as the university assesses the continuing value of the organization to its overall program and future plans.

Decisions about phasing out centers and institutes are based on many issues. Financial exigency and director terminations are only two of these. Theoretically, faculty committees and/or university administrators can conclude at any time that the aims and outputs of such units downgrade institutional prestige, distort university goals, or compromise the institution, but remember also that the "bigger they come, the harder they fall."

The *Research Centers Directory* does an admirable job of amassing material useful in assessing growth trends. How well institutes and centers, recent innovations in the extended history of academe, are integrated into the structure of their host institutions requires further study.

APPENDIX A

RESEARCH CENTERS DIRECTORY

A Note About the Editor

Listing Data

Table of Contents

A NOTE ABOUT THE EDITOR

Preparation of the *Research Centers Directory* is very much a one-man operation. The first edition, *Directory of University Research Bureaus and Institutes*, was published in 1960 and edited by Dr. Paul Wasserman, a research librarian. Dr. Archie Palmer, the present editor, began his stewardship of the *Directory* prior to the issuance of the edition in 1965.

Two notable changes in the compilation of the *Directory* were instituted by Dr. Palmer. First, the name was changed to the *Research Centers Directory* signifying the inclusion of non-profit research organizations sponsored by American and Canadian educational institutions, professional associations, and foundations. Second, the seventeen research categories presently in use were established. The criteria for inclusion in the *Directory* are essentially the same as they were in the 1965 edition, namely, the center must (1) be non-profit, (2) a continuing activity, and (3) in a recognized field of concern. Decisions related to divisional assignments are made by Dr. Palmer who has had a long and distinguished career in academe and government.

Newspaper items, government agencies, and personal contacts are the principal sources utilized by Dr. Palmer in assembling information. Center nominations are usually made by administrators responsible for intercollege programs. University officials, however, often suggest other institutional contacts. Data sheets (copy included) are completed by institute directors; the descriptions in the *Directory* are based on these reports. Despite the checking and rechecking process, some of the information is no longer valid at the time the *Directory* is published.

LISTING DATA FOR
RESEARCH CENTERS DIRECTORY

A Guide to University-Related and Other Nonprofit Research Organizations

Edited by Dr. Archie M. Palmer — Published by Gale Research Co.

When completed, mail to Dr. Archie M. Palmer, Editor, Gale Research Center, 3321 Runnymede Place N.W., Washington, D.C. 20015

---

1. Organization Name _____
   Official Name of Institute, Center, Laboratory, Bureau, or Other Unit

2. _____ 28 _____
   Year Founded — Previous Name and Date of Change in Name

3. Affiliated Institution, If Any _____
   Name of College, University, or Parent Organization

4. Address _____

5. City, State, Zip Code _____ Phone _____
   Include Area Code

6. Head of Organization Dr. / Mr. / Prof. _____ Title _____

7. Present Status ☐ Integral Unit of Institution in Item 3 ☐ Separately Incorporated, but Affiliated with Institution in Item 3 ☐ Independent Nonprofit

   ☐ Other _____
   Specify

8. Under Primary Control of: ☐ Board of Institution ☐ Own Board ☐ Other _____
   Specify

9. No. of Staff _____ Research Professionals _____ Supporting Professionals

   _____ Technicians _____ Non-Professionals (Clerical, etc.) _____ Total

10. Annual Dollar Volume of Research _____ _____ _____
    (Omit If Not for Publication) 1974 1975 1976

11. Source(s) of Support: ☐ Parent Institution (Same as Item 3) ☐ U.S. Government ☐ Industry

    ☐ Other _____
    Specify

12. Subjects of Principal Research Activities _____

13. Description of Research Program and Other Activities _____

14. Are Research Results Published? _____
Form of Publication

15. Organization's Own Serial or Periodical Publication(s) _____

_____
Give Title(s) and Frequency of Issue

16. Recurring Seminars, Professional Meetings, Conferences or Special Programs Sponsored by Organization _____

_____

_____
Mention Name of Event, Subject, Frequency, Month in which Usually Held, Persons Eligible to Attend

17. Special Activities, Services, and Facilities _____

_____

18. Is a Library Maintained? ☐ Yes ☐ No Librarian _____
Name

Number of Volumes _____ Major Subjects _____

19. Subsidiary, Branch, or Affiliated Units _____
List Names and Addresses Here

_____

_____

_____

20. Remarks _____

_____

_____

_____

_____

☐ Annual report, brochure, booklet, or other material describing program and/or activities enclosed. ☐ Mailed separately

• Check Current Status if Not Active
☐ Defunct
☐ Inactive
☐ Merged with _____

• Prepared by _____ • Title _____ Date _____

RESEARCH CENTERS DIRECTORY
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1. AGRICULTURE, HOME ECONOMICS AND NUTRITION
Including Agronomy, Textiles, Animal Husbandry

2. ASTRONOMY
Including Observatories

3. BUSINESS, ECONOMICS AND TRANSPORTATION
Including Management, Accounting, Finance

4. CONSERVATION
Including Fisheries, Forestry, Marine Science, Wildlife

5. EDUCATION
Including Testing, Teaching Materials, Reading, Continuing Education, Adult and Special Education, School Planning

6. ENGINEERING AND TECHNOLOGY

7. GOVERNMENT AND PUBLIC AFFAIRS
Including Civics, Community and Housing Studies, International Affairs, Planning, Public Administration, Urban Studies, Military

8. LABOR AND INDUSTRIAL RELATIONS
Including Occupations, Pensions

9. LAW
Including Copyrights, Patents, Trademarks, Legislation

10. LIFE SCIENCES
Including Botany, Zoology, Plant Sciences, Medicine, Veterinary Science, Dentristry, Nursing, Biology, Pharmacy, Mental Health

11. MATHEMATICS
Including Computer and Data Processing Facilities, Operations Research, Statistics

12. PHYSICAL AND EARTH SCIENCES
Including Archeology, Chemistry, Geology, Meteorology, Mining, Nuclear Science, Physics, Electronics

13. REGIONAL AND AREA STUDIES

14. SOCIAL SCIENCES, HUMANITIES, AND RELIGION
Including Anthropology, Communications, Human Development, Population, Religion, Sociology, History, Ethnic Folklore, Linguistics, Journalism, Creativity, Family Study and Behavior, Race Relations

15. MULTIDISCIPLINARY PROGRAMS

16. RESEARCH COORDINATING OFFICES

17. ADDENDUM

APPENDIX B

Table 9

Organized Research Units by

Division at 51 Land-Grant Institutions

1968/1972/1975

TABLE 9

ORGANIZED RESEARCH UNITS BY DIVISION AT 51 LAND-GRANT INSTITUTIONS 1968/1972/1975

INSTITUTION	Agriculture	Astronomy	Business	Conservation	Education	Engineering	Government	Labor	Law	Life Sciences	Mathematics	Physical Sciences	Regional Studies	Social Sciences	Multidisciplinary	Research Offices	TOTAL
Alabama-Auburn	12/13/13			2/4/4		1/1/1				1/1/1	1/1/1	2/2/2			1/0/0	1/2/2	21/24/24
Alaska-Univ. of	3/3/1			5/5/7		/1	1/2/1			2/1/5	1/1/1	7/6/6	/1	1/1/1		0/1/1	20/20/25
Arizona-Univ. of	9/11/12	2/2/1	1/1/1	4/5/5	1/1/1	2/8/2	1/1/1	0/1/1		5/6/5	2/1/1	13/26/24	1/1/0	3/4/4		2/2/2	46/70/60
Arkansas-Univ. of	13/13/13		2/2/2		0/1/2	2/2/1	1/2/0			2/3/3	1/1/1	1/2/2		/1		1/1/1	23/27/26
California-Berkeley	12/12/12	1/1/2	5/5/3	7/7/6	5/5/5	5/6/3	4/4/2	1/1/1	1/1/1	9/9/9	4/3/3	9/9/7	6/5/5	8/9/10	3/3/3	1/1/0	81/81/72
Colorado-Colo. State	11/12/13			4/3/2		1/1/0				6/5/6	1/1/1	3/4/4		2/1/1		1/1/1	29/28/28
Connecticut-Univ. of	3/2/2		2/3/3	1/2/3	1/1/2	1/1/0	3/3/1	1/1/1		2/2/1	1/1/1	2/2/2	1/1/1	0/1/1		2/2/2	20/23/20
Delaware-Univ. of	1/1/2		2/3/2	1/1/1		/1	0/1/1			/1	1/1/1	2/1/2		0/1/1		2/2/2	9/11/14
Florida-Univ. of	19/22/24	1/1/1	1/1/3	2/2/2	0/2/2	3/3/3	1/2/1			4/4/5	1/1/1	5/4/4	1/1/1	3/2/2		1/1/1	42/46/50
Georgia-Georgia Tech					1/1/1					0/1/1	1/1/2	3/3/2				1/2/2	6/8/8
Hawaii-Univ. of	10/8/7	0/3/3	1/1/1	4/4/2	1/1/0	1/1/2	2/1/1	1/1/1	0/1/1	2/3/4	1/1/1	3/2/2	1/2/1	3/3/5	0/1/2	1/1/1	31/34/34
Idaho-Univ. of	7/8/8		1/1/1	4/4/4		1/1/1	1/1/1				1/1/1	2/3/4		/1		1/0/2	18/19/23
Illinois-Univ. of	4/4/4	1/1/1	3/3/3	1/1/1	8/10/7	8/7/6	3/4/4	1/1/1		16/16/16	3/2/3	11/16/14	3/3/3	8/11/9	1/1/1	2/2/2	73/82/75
Indiana-Purdue	8/8/8		1/1/1		2/2/1	6/7/5	0/1/1	1/1/1		2/3/4	1/1/1	3/6/2		3/3/2	/3	1/1/2	28/34/31
Iowa-Iowa State	2/2/3		1/1/1	2/3/3		4/4/4			1/1/1	7/6/6	2/2/1	3/4/4		1/1/1	1/2/2		24/26/26
Kansas-Kansas State	14/14/14				3/2/1	6/6/6				4/3/3	2/2/2	3/5/5	/1	1/1/2		2/2/2	35/35/36
Kentucky-Univ. of	3/3/3		1/1/0		1/2/4	2/2/2	0/1/1			2/4/2	1/1/1	2/2/4		3/2/3		1/1/1	16/19/21
Louisiana - L.S.U.	14/16/18		6/5/2	3/3/0	1/1/2	1/1/1	1/2/2		2/2/3	3/4/5	1/1/1	6/6/4	1/1/1	2/2/1	/1		41/44/41
Maine - Univ. of	5/4/4			4/4/4		1/1/1	1/1/1	/1		1/1/1	1/1/1	1/1/3		/3		2/2/2	16/15/21
Maryland-Univ. of	1/1/2	1/1/2	2/1/1	1/1/4	1/1/1	2/1/3	3/2/3			8/8/5	1/1/2	3/5/7	0/1/0	4/2/1		1/1/0	28/26/31
Massachusetts-Univ. of	3/3/5	0/1/1		2/2/4	1/0/1		0/1/1	1/1/1		2/2/4	1/1/1	2/2/1		/2		/2	12/13/23
Michigan-Michigan State	8/13/13	/1	2/3/0	4/5/1	6/8/5	2/2/2	1/1/1	1/1/0		4/6/6	3/4/4	2/2/3	2/1/2	2/3/4	/1	2/1/2	39/50/45
Minnesota-Univ. of	10/8/11	1/1/1	0/1/3	7/8/7	5/7/8	2/3/3	5/5/7	1/1/1		10/11/10	2/2/4	5/4/9	/2	6/9/15	2/1/0	/1	56/61/82
Mississippi-Miss. State	13/14/13		1/1/0	3/2/0		1/2/0	0/1/0		/1	/1	1/1/1	2/2/0		0/1/2	/1	1/1/1	22/25/20
Missouri - Univ. of	5/5/6		1/2/1	6/5/5	0/1/1	1/1/1				9/11/11	1/1/0	4/4/4		2/4/5	1/1/0	2/2/1	32/37/35
Montana - Montana State	10/10/10			3/3/3		2/2/0				2/2/2	1/1/1	1/1/2				1/1/1	20/20/19
Nebraska - Univ. of	6/5/9		1/1/1			1/1/2				5/5/9	1/2/2	1/1/2	/1	0/1/1		1/1/1	16/17/28
Nevada - Univ. of	5/8/8	1/1/1	1/1/1	0/1/1	1/2/2	1/1/0	1/1/1			6/6/5	1/0/0	10/7/6	1/1/1	0/1/2	1/2/2		29/32/30
New Hampshire-Univ. of	1/1/1			2/1/1		1/2/1	1/1/1				1/0/0	1/1/2			1/1/3	1/0/0	9/7/9
New Jersey-Rutgers	1/1/5		1/3/2	2/2/3	1/2/2	2/1/1	3/3/4	1/1/1	0/1/1	3/4/4	2/2/2	3/1/1		3/5/7	1/1/2	1/1/1	24/28/36
New Mexico - N.M.S.	6/8/7		/1			1/1/0				1/1/0	2/1/1	3/4/2			1/1/1	/1	14/16/13
New York - Cornell	9/9/2	3/3/3		5/7/8	2/1/1	1/0/0	1/2/1			7/10/11	2/2/2	6/7/6	5/6/6	1/1/1	0/1/1	1/1/1	43/50/43
North Carolina - N.C.S.	18/17/16		0/1/1	2/3/3	/1	6/5/3	/1			2/3/2	2/3/2	2/4/3			1/0/1		33/36/33
North Dakota - N.D.S.	10/9/9		0/1/2	/1		1/1/1				2/2/2	1/1/0	1/1/1	1/1/1				16/16/17
Ohio - Ohio State	2/3/12	2/1/1	2/2/3	3/3/3	0/4/4	3/12/14	/3	2/2/2	1/1/1	5/7/10	2/3/4	3/3/6	1/1/1	7/4/7	1/0/2	2/2/1	36/48/74
Oklahoma - O.S.U.	18/15/15		1/1/1	4/5/4	/1	1/1/1		1/1/1		3/3/3	2/2/2	2/2/2				1/1/1	33/31/31
Oregon - Oregon State	15/16/13		1/0/0	6/7/7		1/1/1	/1			3/3/2	1/1/1	2/4/5		1/1/1	2/1/0	2/2/2	34/36/33
Pennsylvania - P.S.U.	2/3/12	1/1/1	1/2/2	3/3/4	4/3/3	10/10/17	1/1/2			6/7/11	1/2/3	8/14/18		2/2/14	1/1/2	3/2/2	43/51/91
Puerto Rico - Univ. of	9/9/8		/2	2/2/2	2/2/1	1/1/1	/1	1/1/0		2/6/3	1/3/3	3/3/3	2/2/1	5/5/5	2/3/3	1/0/0	31/37/33
Rhode Island-Univ. of	1/1/1			1/3/3		1/1/1	1/1/0		0/1/1		0/1/1	2/1/1					6/9/8
South Carolina - Clemson	10/9/9					3/3/3					1/1/1	2/1/1					16/14/14
South Dakota - S.Dak. S.	9/9/6			2/4/3		1/1/1				2/3/1	1/1/1	1/1/1			/1		16/19/14
Tennessee - Univ. of	11/10/10		1/2/1	2/4/4	1/3/4	3/3/2	2/2/2			4/8/14	1/3/3	2/2/2		0/1/2		1/1/2	28/41/45
Texas-Texas A.&M.	33/34/34		/3	4/4/6	/1	6/7/9				5/5/3	2/2/2	6/5/7		1/0/0		2/2/2	59/59/67
Utah - Utah State	17/18/18		1/1/1	4/6/6	1/1/1	1/1/1				3/4/4	1/1/1	2/6/6		0/2/2	0/1/1	1/1/0	31/42/41
Vermont - Univ. of	1/1/1			0/1/1			1/1/1			1/1/1	1/1/1	/1				3/1/0	7/6/6
Virginia - V.P.I.	14/14/10			1/1/3		1/1/0	1/1/1				1/3/2	3/3/1				/1	21/23/18
Washington-Wash. State	9/9/8		1/1/0	1/1/1	0/1/1	1/1/1	1/1/1			5/8/5	1/0/0	2/3/3		/2	1/1/0		22/26/22
West Virginia-W.V.U.	5/5/5		1/1/1		1/1/1	1/2/2	1/1/1	1/1/1		4/4/3	1/1/1	4/2/2		2/2/1		1/0/0	22/20/18
Wisconsin-Univ. of	7/16/15	1/1/1	7/8/2	2/7/5	12/15/9	11/10/9	1/1/0	3/4/3	2/2/2	16/15/11	2/3/3	9/12/10	4/4/4	20/21/16		1/1/1	98/120/91
Wyoming - Univ. of	7/10/7		1/1/0	3/3/3	1/1/1	1/0/1	/1		/1	1/2/3	2/2/2	1/3/2		3/5/5	1/1/1	0/1/0	21/29/26

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Renee C. Friedman has been associated with the Center for the Study of Higher Education since 1969. She has co-authored a book on institutes and centers and has maintained an ongoing interest in the subject. Her most recent studies have included the Servicemen's Opportunity College and master planning for post-secondary education.

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The Pennsylvania State University

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